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PLANT IMMIGRANTS



No. 134.

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GENERA REPRESENTED IN THIS NUMBER.

	Page		Page
Acacia	1179	Mesembryanthemum	1184
Annona	1179	Nageia	1184
Artocarpus	1180	Otophora	1185
Boehmeria	1180	Passiflora	1185
Brassica	1180	Persea	1185
Caesalpinia	1180	Polygonum	1186
Canavali	1181	Prunus	1186
Casuarina	1181	Ruprechtia	1187
Citrullus	1181	Saraca	1188
Coix	1182	Strophanthus	1188
Cynometra	1182	Telopea	1188
Dahlia	1182	Trifolium	1188
Guaiacum	1183	Vittadinia	1189
Hydnocarpus	1183	Voandzeia	1189
Leptospermum	1183	Zea	1189
Maximiliana	1184		

Plates:

- Pl. 219. The Pacaya Palm of Guatemala, *Chamaedorea* sp.
 220. The Large-fruited Hawthorn of Guatemala,
Crataegus stipulosa.

Foreign Seed and Plant Introduction.

EXPLANATORY NOTE

This multigraphed circular is made up of descriptive notes furnished mainly by Agricultural Explorers and Foreign Correspondents relative to the more important introduced plants which have recently arrived at the Office of Foreign Seed and Plant Introduction of the Bureau of Plant Industry of the Department of Agriculture, together with accounts of the behavior in America of previous introductions. Descriptions appearing here are revised and published later in the INVENTORY OF PLANTS IMPORTED.

Applications for material listed in these pages may be made at any time to this Office. As they are received they are placed on file, and when the material is ready for the use of experimenters it is sent to those on the list of applicants who can show that they are prepared to care for it as well as to others selected because of their special fitness to experiment with the particular plants imported. Do not wait for the annual catalogue entitled NEW PLANT INTRODUCTIONS which will be sent you in the autumn and in which will be listed all plants available at that time. Regular requests checked off on the check list sent out with the catalogue are not kept over from year to year. If you are especially interested in some particular plant in the catalogue write and explain in detail your fitness to handle it.

One of the main objects of the Office of Foreign Seed and Plant Introduction is to secure material for plant experimenters, and it will undertake as far as possible to fill any specific requests for foreign seeds or plants from plant breeders and others interested.

David Fairchild,

Agricultural Explorer in Charge.

June 1, 1918.

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Acacia albida Delile. (Mimosaceae.) 44922. Seeds from the vicinity of Khartum, Egyptian Sudan. Presented by Mr. F. G. Walsingham, Giza Branch, Ministry of Agriculture, Cairo, Egypt. A large, much-branched tree, native of tropical and northern Africa, and yielding a gum similar to gum arabic. The leaves are eaten by goats, and the bark is used in curing leather. (Adapted from Oliver, Flora of Tropical Africa, vol. 2, p. 339, 1871, and from Kew Bulletin Miscellaneous Information, Additional Series 9, Part 2, p. 288.)

Acacia seyal Delile (Mimosaceae.) 44923. Seeds from the vicinity of Khartum, Egyptian Sudan. Presented by Mr. F. G. Walsingham, Giza Branch, Ministry of Agriculture, Cairo, Egypt. A small or medium-sized tree common in tropical Africa north of the equator. It is one of the principal gum-yielding acacias in the Nile region. The gum, which flows freely from all wounds, is of a bright amber color, becoming white and brittle when thoroughly dry. It has a relatively high viscosity and strong adhesive power. (Adapted from Oliver, Flora of Tropical Africa, vol. 2, p. 351, and from Kew Bulletin Miscellaneous Information, Additional Series 9, Part 2, p. 295-296.)

Acacia spadicigera Cham. & Schlecht. (Mimosaceae.) **Bull-horn acacia.** 44914. Seeds from Zacuapam, Vera Cruz, Mexico. Presented by Dr. C. A. Purpus. "An interesting shrub or small tree, with spreading branches armed with thorns resembling the horns of a bull, and consequently called, together with its allies, **bull-horn acacia**. The thorns attracted the attention of early botanists from the fact that they are usually hollowed out and inhabited by stinging ants which serve as body-guards, protecting the plant from herbivorous animals. The present species is very closely allied to *A. cornigera* of Linnaeus if not identical with that species. The hollow, indehiscent pods, terminating in sharp spines, enclose a number of hard seeds surrounded by a sugary aril which is much relished by cattle and other animals." (W. E. Safford.)

Annona cherimola Miller. (Annonaceae.) 44841. **Cherimoya.** From Oran, Salta, Argentina. Presented by Mr. S. W. Damon. "Seeds of *Annona cherimola* from rather good fruit which I ate a few days ago. The trees which bore the fruit withstood, last winter, a temperature of about 15° Fahr." (Damon.)

Artocarpus communis Forster. (Moraceae.) 44908. **Bread-fruit.** From Honolulu, Hawaii. Presented by Mr. Gerrit P. Wilder. "**Ulu** (Hawaiian variety)." This variety, which now grows wild throughout the Hawaiian Islands, was originally introduced from Tahiti. It has large, rough, ovate, deeply lobed leaves, and the staminate flowers appear in large yellow catkins. The large-stemmed fruit is either round or oblong and varies from 5 to 8 inches in diameter. The thick, tough rind, which is brownish at maturity, encloses a firm, very starchy and somewhat fibrous pulp which becomes mealy when cooked, slightly resembling a dry sweet potato. It is much esteemed as an article of diet. The tree is propagated by suckers or by layering. (Adapted from G. P. Wilder, Fruits of the Hawaiian Islands, p. 100, plate 48, under *A. incisa*.)

Boehmeria macrophylla D. Don. (Urticaceae.) 44860. Seeds from Nice, France. Presented by Dr. A. Robertson-Proschowsky. A pretty shrub with narrow, dentate leaves 6 to 12 inches in length, and very long, drooping flower spikes. It is a native of Upper Burma and northeastern India, where it ascends to 4000 feet. The wood is light reddish brown and moderately hard, and the bark yields a good fiber which is used for ropes and fishing lines. (Adapted from J. S. Gamble, Manual of Indian Timbers, p. 658, 1902.)

Brassica pekinensis (Lour.) Skeels. (Brassicaceae.) 44892. **Pet-sai.** From Ann Arbor, Michigan. Purchased from Mrs. Fred Osborn, Manager, Varsity City Celery Company. "**Lun gar bak.** Of the dozens of strains of Chinese cabbage, the short-leaved, solid-headed strain is the one that we have always used and found most profitable. As a field crop sow in rows 3 feet apart and thin to 18 inches in the row. Keep the plants well watered and cultivated, for as soon as growth is checked the seed head is formed and bursts forth as soon as moisture is again applied." (Osborn.)

Caesalpinia melanocarpa Grisebach. (Caesalpinaceae.) 44816. **Guayacan.** From Chaco Paraguay, near Asunción, Paraguay. Presented by Mr. C. F. Mead, Asunción. "A very handsome and useful timber tree, though for the most part useless in Chaco through being unsound. In many respects it corresponds to teak. The bark has medicinal properties. It may do well in the southern United States." (Mead.)

Canavali gladiatum (Jacq.) DeCandolle. (Fabaceae.) 44806. **Sword bean.** From Cairo, Egypt. Presented by Mr. F. G. Walsingham, Giza Branch, Horticultural Division, Ministry of Agriculture. A perennial, climbing plant, with leaves composed of 3 roundish leaflets 2 to 6 inches long, and axillary racemes of dark purple flowers. The scimitar-shaped pods are about a foot long and contain numerous red or white seeds which resemble large beans. The young pods are sliced and boiled for table use, and are also pickled. Propagation is by seeds.

Casuarina stricta Dryander. (Casuarinaceae.) 44909. **Drooping sheoak.** Presented by Mr. B. Harrison, through Mr. C. V. Piper. An Australian tree, 20 to 30 feet in height, known in New South Wales as **Feld's Fodder tree**; suitable for dry or semi-arid sections. The foliage is eagerly eaten by cattle, especially in times of drought, and it is said that one tree has supported 8 to 10 head of stock at one time. Even in large quantities it does not appear to have an injurious effect on the cattle. The wood is used for cabinet work and shingles, and makes an excellent fuel. (Adapted from letter of Mr. B. Harrison of May 8, 1917.)

Citrullus vulgaris Schrader. (Cucurbitaceae.) 44842. **Water-melon** seeds from Durban, Natal. Presented by Mr. William W. Masterson, American Consul. **Mankataan.** A melon much cultivated throughout Natal for use as cattle feed. It is exceptionally tough, enduring rough handling and keeping for six months after ripening without spoiling; but, at the same time, as it is very watery, it makes an excellent green fodder for live stock, especially when mixed with such feed as alfalfa hay or corn stalks. It is also very suitable for jam making, some of the Cape Colony firms using large quantities for this purpose. One pound of seed will plant two or three acres, and as much as 120 tons of melons have been taken from a single acre. It might be suitable for the semiarid regions of the United States. (Adapted from William W. Masterson, Consular report, April 18, 1917.)

Citrullus vulgaris Schrader. (Cucurbitaceae.) 44869. **Water-melon** seeds from Curacao, Dutch West Indies. Collected by Mr. H. M. Curran. "The watermelons of Curacao are the best I have tasted in the tropics. March, 1917." (Curran.)

Coix lacryma-jobi ma-yuen (Rom.) Stapf. (Poaceae.) 44843. **Job's tears.** From Chosen, Korea. Presented by Miss Katherine Wambold, Yun Mot Kol, Keijo, through Mrs. M. W. Spaulding, Washington, D. C. "**Yule moo.** Grows in ordinary fields. Made into meal by mixing with water, then draining, drying, and pounding. When mixed with water and salt it is made into a kind of bread." (Wambold.) This variety might be called the cultivated edible Job's tears and includes many forms, all of which are characterized by having a thin, loose, easily broken shell. They are often longitudinally striated and in many examples are constricted at the base into what has been called an annulus. Among the aboriginal tribes in the central provinces of India this grain forms an important article of food. In Japan, where the plant has been introduced, the seeds are pounded in a mortar and eaten as meal. (Adapted from the Agricultural Ledger, No. 13, p. 217-225, 1904.)

Cynometra cauliflora L. (Caesalpiniaceae.) 44895. **Nam-nam.** From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, Director, Botanic Garden. A medium-sized tree, with a very irregular, knotty trunk, covered with thick, brown bark marked with numerous grayish and whitish spots. The alternate, compound leaves are smooth and light green when mature, but when young are red or pink, or, in some varieties, yellow. From the trunk and branches appear the corymbs of small, pink or white flowers. The flattened, roundish, light brown pods have a fleshy portion which is very palatable when stewed. The tree is a native of Java. (Adapted from Van Nooten, *Fleurs & Fruits de Java*, part 6, 1863.)

Dahlia imperialis Roezl. (Asteraceae.) 44819. **Tree dahlia.** From Guatemala. Collected by Mr. Wilson Popenoe, of this Bureau. "(No. 105. From Purula, Department of Baja Verapaz.) A double variety of the common tree dahlia. It is pale lilac, the same color as the typical form; but unlike the latter, which has large single flowers, this variety has double flowers resembling in form some of the common garden dahlias of the North. The plant grows to a height of 15 feet or even more, and blooms during a long period. It is cultivated in the gardens of the Indians, but is not common. In the Pokom dialect it is called **shikhor**, in Quekchi **tzoloh**." (Popenoe.)

Guaiacum officinale L. (Zygophyllaceae.) 44858. **Guayan** seeds from Zacapa, Guatemala. Collected by Dr. F. S. Johnson, and sent through Mr. Wilson Popenoe, of this Bureau. "(No. 145a. June 5, 1917.) The **gauya-****can** sometimes called by Americans **lignum vitae**, is found in abundance upon the plains of the lower Motagua valley, in the vicinity of El Rancho, Zacapa, and other towns. It is a small tree sometimes attaining a height of 30 feet, and usually somewhat spreading in habit. The trunk is gnarled and twisted, with slender branches bearing small and delicate leaves. Toward the end of the dry season, i.e., in February or March, the tree comes into flower, and is then a mass of lavender purple, distinguishable for long distances across the plains. It remains in bloom for several weeks. The wood is exceedingly hard, and, though difficult to work, it is of value for cabinet purposes. The heartwood is rich brown in color, while the sapwood which surrounds it is light yellow. Both take a fine polish. The tree thrives in a warm climate, with little rainfall. The soil upon which it grows is often rocky and poor. Whether it will stand any frost cannot be stated, but it seems likely that it may succeed in parts of California and Arizona, and perhaps also in Florida. Small trees often flower profusely. It should be given a trial as an ornamental in the regions mentioned." (Popenoe.)

Hydnocarpus alpina Wight. (Flacourtiaceae.) 44896. Seeds from Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, Director, Botanic Garden. **var. elongata**. Apparently an unpublished varietal name. The species may be described as follows: A large tree, 70 to 100 feet in height, with very variable leaves (red when young and deep green when old), up to 7 inches in length and $2\frac{1}{2}$ inches in width, and dioecious flowers in axillary racemes. The fruit is globose, about the size of an apple, with a brown, hairy surface. The seeds yield an oil which is used as fuel, and the wood is employed for general carpentry. It is a native of the Nilghiri Hills in southern India. (Adapted from Watt, Dictionary of the Economic Products of India, vol. 4, p. 308, and from J. D. Hooker, Flora British India, vol. 1, p. 197.)

Leptospermum scoparium Forster. (Myrtaceae.) 44848. **Manuka** seeds from Avondale, Auckland, New Zealand. Presented by Mr. H. R. Wright. "No. 1. Very hardy.

Used for firewood as it gives great heat. Very pretty when in flower. Grows 6 to 10 feet high." (Wright.) One of the most abundant of New Zealand shrubs, reaching occasionally a height of 30 feet, with hard, leathery, sharp-pointed leaves, and white or pinkish, odorless flowers up to $\frac{3}{4}$ inch in width. This plant flowers so profusely that the entire country appears as though covered with snow. The entire plant is very aromatic, and the leaves have been used for making tea. The wood is used for fences and firewood. (Adapted from Laing & Blackwell, Plants of New Zealand, p. 272.)

Maximiliana vitifolia (Willd.) Kr. & Urban. (Cochlospermaceae.) 44821. Seeds from Guatemala. Collected by Mr. Wilson Popenoe, of this Bureau. "(No. 107a.) **Tecomasuche**. A common shrub or small tree of eastern and central Guatemala from the highlands at about 4000 feet down to a level of 1000 feet or perhaps lower. The plant occasionally reaches a height of 35 feet, is always stiff, rather sparsely branched, and bears stout branchlets which usually carry leaves only toward their tips. The plant is leafless from December or January to May, in most sections, and, at this period, produces at the ends of the branchlets numerous large yellow flowers, single, brilliant in color, with a deep orange center. They are followed by oval seed pods as large as a hen's egg." (Popenoe.)

Mesembryanthemum chilense Molina. (Aizoaceae.) 44814. **Doca** seeds from Chile. Presented by Mr. G. F. Arms, Coquimbo, Chile. "**Doca**, or **Frutillas del Mar** (Strawberries of the sea). Collected on the sea beach near Serena, Chile." (Arms.) A glabrous, succulent plant about a meter ($3\frac{1}{4}$ feet) in length, with opposite, triangle green leaves from 4 to 7 cm. ($1\frac{3}{5}$ to 3 inches) long, solitary purplish flowers, and fleshy fruits. It grows flat on the sand on the sea coast from Coquimbo to Rio Bueno, Chile. The fruit is edible, having an agreeable taste, but if eaten in abundance has a purgative effect. (Adapted from A. Murillo, Plantas Medicinales du Chili, pp. 99, 100, 1889.)

Nageia excelsa (D. Don.) Kuntze. (Taxaceae.) 44850. Seeds from Avondale, Auckland, New Zealand. Presented by Mr. H. R. Wright. "This is the one tree exclusively used in this country for making butter boxes, the

wood being odorless and of a nice white color. The tree grows very tall, and often has a trunk 5 or 6 feet in diameter." (Wright.) Native Maori name **Kahikatea**.

Otophora alata Blume. (Sapindaceae.) 44899. **Pisang tjina** seeds from Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, Director, Botanic Garden. A tall Javanese tree, with compound, glabrous, green leaves, and purplish flowers in pendulous axillary racemes or sometimes solitary. The fruits are not much eaten, but hang in graceful clusters, remarkable for their beauty. The juice of the fruit is said to be useful in removing stains from linen. (Adapted from Van Nooten, *Fleurs & Fruits de Java*, Part 3, 1863.)

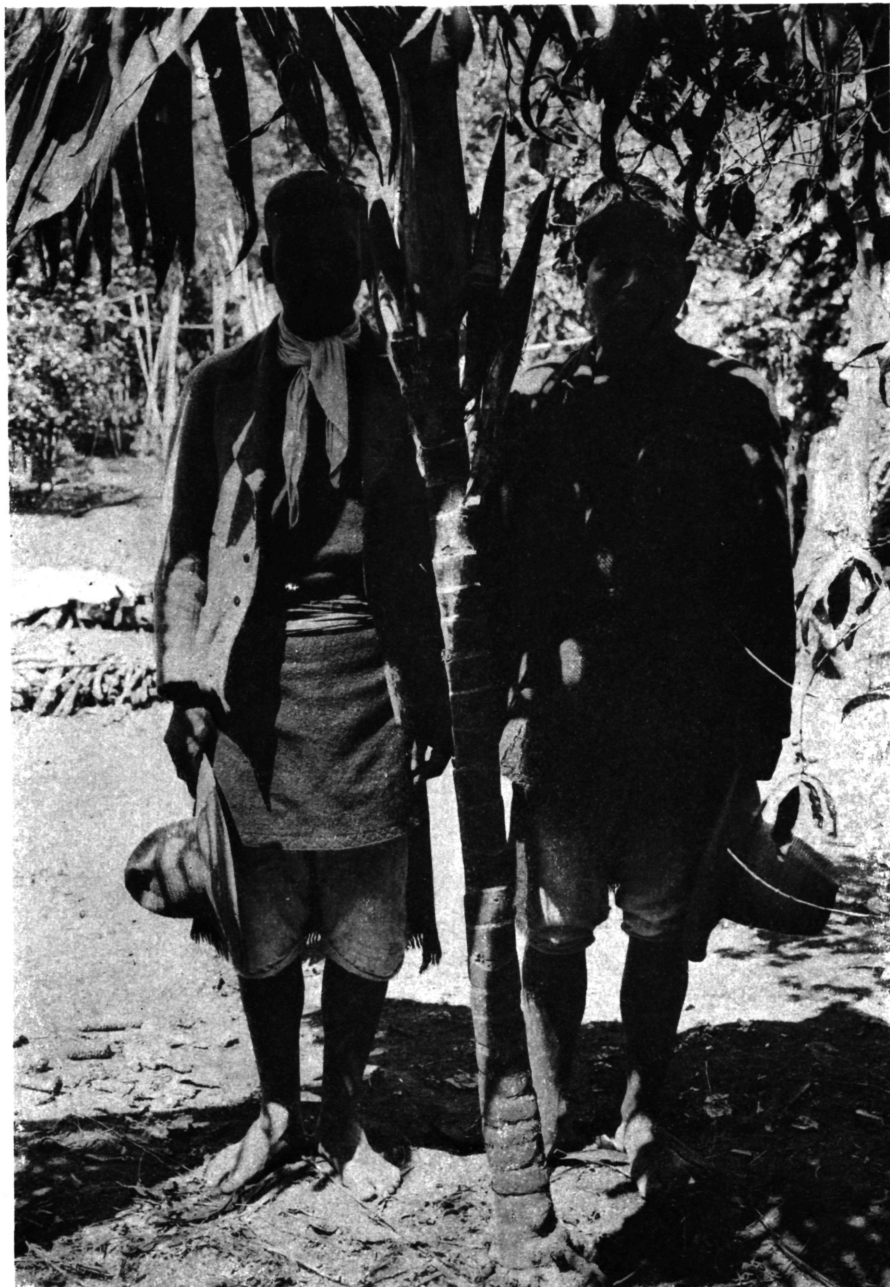
Passiflora edulis Sims. (Passifloraceae.) 44854. **Passionfruit** seeds from Avondale, Auckland, New Zealand. Presented by Mr. H. R. Wright. "**Giant**. An improved strain of the common passionfruit as grown in New Zealand and Australia. Largely grown commercially. Will grow anywhere, where frosts are not too heavy in winter." (Wright.)

Persea americana Miller. (Lauraceae.) 44856. **Avocado** budsticks from Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for this Bureau. "No. 146. Avocado No. 30. **Tertoh**. A famous avocado from Mixco, noted for its large size (3 pounds) and excellent quality. Unfortunately, the ripe fruit has not been seen by me, hence it is introduced on the recommendation of several Americans who are familiar with it. The parent tree is growing in the sitio of Leandro Castillo, in the town of Mixco, near Guatemala City. The elevation is about 5700 feet. The tree is said by the owner to be about 20 years old. It is about 25 feet high, broad and spreading in habit, with a trunk 15 inches thick at the base, branching 7 feet from the ground to form the dense crown 30 or more feet broad. A peculiarity of the tree is its very brittle wood. This may be against the variety in California and Florida, where strong winds occasionally do much damage. The budwood is good. The climate of Mixco is cool, but not cold enough to test the hardiness of the variety. This can be determined only by a test in California or Florida. The tree flowers in March. It is said by its owner to bear at least a few fruits every season. It produced very few from the 1916

bloom, but set a good crop in 1917, and there should be a fine lot of fruits to ripen next year (1918). Judging from accounts given me, the tree usually does not carry a great many fruits, but this would be expected of a variety of such large size. The season of ripening is said by the owner to be from February to April, most of the crop being picked in March. The fruits, as indicated by young ones now on the tree (June 12, 1917), are long and slender,—best termed slender pyriform, perhaps, but not markedly swollen at the lower end. The surface is nearly smooth, and the skin rather thin for this race. When ripe the color is said to be deep purple, and the flesh is said to be of excellent flavor. An American who has known the variety for some time tells me he has weighed specimens which tipped the beam at 3 pounds. This is a larger fruit than any other included in the collection and, so far as I am aware, the largest yet seen in Guatemala. Since it has not been possible for me to examine the mature fruit, it is recommended that budded plants be distributed with the understanding that the variety is a very large-fruited one highly recommended by several people who are familiar with it, but not tested by me." (Popenoe.)

Polygonum tinctorium Loureiro. (Polygonaceae.) 44805. Seeds from Yih sien, Shantung, China. Presented by Rev. Ralph G. Coonradt. "The 'Blue plant' may be common in America. When mature, it is put through a process to obtain the dye with which all of our blue clothes are colored." (Coonradt.) An annual herb commonly cultivated in dry fields in China and Japan, growing to a height of 1 to 2 feet. The leaves are variable in shape, ranging from long and narrow to short and oval, and the pink flowers are borne in spikes. The dried leaves are made into "indigo balls" from which the dye is obtained. (Adapted from Useful Plants of Japan, p. 101, 1895.)

Prunus salicifolia H.B.K. (Amygdalaceae.) 44885. Cherry seeds from Guatemala City, Guatemala. Collected by Mr. Wilson Popenoe, of this Bureau. "(No. 128a. May 16, 1917.) The wild cherry of the Guatemalan highlands, called **cereza** in Spanish and **capulin** in the Quiché Indian dialect. The tree is found both wild and cultivated in the mountains of Guatemala, from elevations of about 4000 feet up to 9000 feet or perhaps higher. As commonly seen, the tree is erect, often somewhat slender,



THE PACAYA PALM OF GUATEMALA.

(*CHAMAEDOREA* SP., S. P. I. NO. 44059.)

The pacayas are the inflorescences resembling ears of corn in shape, which are borne on the trunk. (Three of these are shown in the photograph.) These are produced all the year round and form an important article of diet among the Guatemalans. When the outer covering of a pacaya is removed, the tender, yellowish white inflorescence may be eaten raw, like palm-bud salad, or it may be fried in an omelet or in an egg batter, or it may be boiled like cauliflower. The flavor of very young pacayas is delicate and agreeable, but that of the older ones unpleasantly bitter. As this palm, which, according to Mr. Wilson Popenoe, is grown in nearly every dooryard in Coban, Guatemala, thrives at an altitude of 5,000 feet and can withstand lime, it is worthy of a careful trial in Florida and California. (Photographed by Wilson Popenoe, San Antonio A. C., Guatemala, October 19, 1916; P16874FS.)



THE LARGE-FRUITED HAWTHORN OF GUATEMALA.

(*CRATAEGUS STIPULOSA* STEUD.)

In the markets of Guatemalan towns this Manzanilla is a common fruit. It comes from the highlands, where it is extensively used for the preparation of jams and jellies, for which purpose its deep yellow, applelike fruits are admirably suited. The flavor of these fruits resembles that of our own hawthorn, but is somewhat better. This species ought to thrive in California and Florida. See S. P. I. No. 43430. (Photographed by Wilson Popenoe at Antigua, Guatemala, October 20, 1916; P16885FS.) Natural size.

reaching a height of about 30 feet, the trunk stout and occasionally as much as 3 feet thick, and the bark rough and grayish. The young branchlets are dotted with grayish lenticels. The leaves, which are borne upon slender petioles $\frac{3}{4}$ inch long, are commonly $4\frac{1}{2}$ inches in length, $1\frac{1}{4}$ to $1\frac{1}{2}$ inches in breadth at the widest point, and oblong-lanceolate in outline, with a long, slender tip. The upper surface is dull green, the lower surface glaucous, and the margin is rather finely serrate. The flowers, which are produced from January to May, are white, about $\frac{3}{8}$ inch wide, and very numerous on slender racemes 2 to 4 inches in length. As many as 15 or 20 fruits sometimes develop on a single raceme, but many drop off before reaching maturity, with the result that 2 to 5 ripe fruits are commonly found on each raceme. The season of ripening in Guatemala is from May to September. The ripe fruits, which are slightly oblate in form and up to $\frac{3}{4}$ inch in diameter, separate readily from the short fruit stalks, leaving the green, 5-toothed calyces adhering to the latter. In color the fruit is deep glossy maroon-purple. The skin is thin and tender, but so firm that the fruit is not easily injured by handling. The flesh is pale green, meaty but full of juice. The flavor is sweet, suggestive of the Bigarreau type of cherry, with a trace of bitterness in the skin. The stone is a trifle large in comparison to the size of the fruit. Pleasant to eat out of hand, this cherry can also be eaten stewed, or made into preserves or jams. In Guatemala it is most commonly eaten out of hand and as a sweet preserve. This species does not appear to be adapted to hot tropical seacoasts, but it seems to be distinctly subtropical in character. It may succeed in moist subtropical regions such as Florida, where other types of cherries do not thrive." (Popenoe.)

Ruprechtia fagifolia Meisner. (Polygonaceae.) 44878. **Duraznillo** seeds from Estacadita, near Sabanita de Coro, Venezuela. Presented by Mr. H. M. Curran. "**Komari**. A small tree. May, 1917." (Curran.) South American tree with smooth bark which, in renewing itself each year, wrinkles in a peculiar way, giving the tree a characteristic appearance. In the spring it is covered with yellowish flowers which later become pinkish, making the tree very ornamental. The wood is of no commercial use, so far as is known. (Adapted from Lillo, Contribución al Concimiento de los Arboles de la Argentina, p. 83.)

Saraca declinata (Jack.) Miquel. (Caesalpinaceae.) 44900. **Kisokka** seeds from Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, Director, Botanic Garden. An ornamental tree, rarely more than 20 feet high, with alternate, pinnate leaves composed of 6 to 8 pairs of oblong-lanceolate leaflets which are purplish brown when young. The bright yellow, reddish-tinged flowers occur in corymbs, sometimes on the trunk, and make a pleasing contrast with the crimson peduncles of the corymb. The oblong, flat pods are about a foot long, and are of a beautiful purplish crimson while immature. (Adapted from Van Nooten, *Fleurs & Fruits de Java*, Part 3, 1863.)

Strophanthus caudatus (Burm.) Kurz. (Apocynaceae.) 44901. **Kikoeija** seeds from Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, Director, Botanic Garden. A very ornamental, shrubby vine, with white-dotted dark brown bark; simple, opposite, smooth, oval-acuminate, green leaves; and large, showy, red and white flowers occurring either singly or in corymbs. The fruits are follicles sometimes 2 feet in length, and the seeds, which are provided with long, silky hairs, are very pretty. This vine is a native of the East Indies, where the women use the flowers to adorn their head dresses. (Adapted from Van Nooten, *Fleur & Fruits de Java*, Part 7, 1864, under *S. dichotomus*.)

Telopea speciosissima (Smith) R. Brown. (Proteaceae.) 44837. **Waratah** seeds from Sydney, Australia. Presented by Mr. J. H. Maiden, Director, Botanic Gardens. A stout, erect, glabrous shrub 6 to 8 feet high, with leathery, cuneate-oblong leaves, 5 to 10 inches long, and very handsome crimson flowers in dense heads or racemes 3 inches in diameter. The fruit is a leathery, recurved follicle 3 to 4 inches long, containing 10 to 20 seeds. It is a native of New South Wales. (Adapted from Bentham & Mueller *Flora Australiensis*, vol. 5, p. 534.)

Trifolium pratense L. (Fabaceae.) 44906. **Red clover** seeds from Petrograd, Russia. Presented by Mr. I. A. Pullman, through Dr. Robert Regel, Bureau of Applied Botany. "(March 25, 1917.) Late, tufted. Second generation; I. A. Pullman, selector. Crop of 1916. From 2.7 acres were harvested 10,000 pounds of hay and 600 pounds of seeds." (Pullman.) Introduced for the Office of Forage Crop Investigations.

Vittadinia triloba (Gaud.) DeCandolle. (Asteraceae.) 44838. Seeds from Sydney, Australia. Presented by Mr. J. H. Maiden, Director, Botanic Gardens. An herbaceous plant, either erect and apparently annual or with diffusely ascending stems from a perennial woody base, usually not more than a foot high. The leaves are entire or coarsely 3-lobed, and the purplish flower-heads are solitary and terminal. It is a native of southern Australia, and might be useful as an ornamental in borders. (Adapted from F. M. Bailey, Queensland Flora, Part 3, p. 811, under *V. australis*.)

Voandzeia subterranea (L.) Thouars. (Fabaceae.) 44817. **Woandzu** seeds from Umkomaas, Natal, South Africa. Presented by Rev. H. D. Goodenough. "The natives plant these when the first rains come, on new ground, preferably a sandy loam. They look very much like peanuts, but in cooking they are boiled in their shells." (Goodenough.) A yellow-flowered annual with upright, long-stalked compound leaves composed of 3 leaflets. Like the common peanut, the flower stalks bend down to the earth after flowering, and the pods are ripened underneath the ground. In the requisite cultural conditions the plant much resembles the common peanut. (Adapted from H. F. Macmillan, Handbook of Tropical Gardening and Planting, pp. 232, 233.)

Zea mays L. (Poaceae.) 44830. **Corn** from Johannesburg, South Africa. Purchased from the Agricultural Supply Association. "*Izotsha* maize is a strain (apparently of Boone County White) which is successfully grown in a limited area on the South Coast of Natal, bordering Pondoland, an area which is subject to great extremes of drought and heat during the summer. It is claimed by farmers in that locality that it is the only variety of maize which has been found satisfactory in that particular vicinity, but as they are isolated from the main maize belt of South Africa, it is quite possible they have not tried some of the more drought-resistant types which are now being grown in other parts of the Union. It occurred to me that owing to its obvious drought-resisting qualities, this variety might be of use to farmers in the southeastern states, especially in parts of Florida and the adjacent states subject to considerable drought." (Letter of Mr. J. Burt-Davy dated August 18, 1917.) Introduced for the use of the Office of Cereal Investigations.

Notes on Behavior of Previous Introductions.

Mrs. Wilhelmine Seliger, 15 Waverly Ave., Hartford, Conn., in a letter dated October 7, 1917, states:

"In conclusion of my selection for new trial plants or seeds, I wish to write of my experience in raising the Chinese cabbage, *Brassica pekinensis*, the seeds of which I received last spring from your Bureau.

"I have eaten today the first dish of this fine, delicious variety of cabbage from my own raising. It is a desirable sort prepared either boiled, or eaten raw as a salad while crisp; the bleached leaves have a fine-grained texture and a mild agreeable flavor. For our New England climate, it is absolutely necessary to sow the seed early if heads are desired. I sowed part of my seed for trial when my peas were up above ground. The result was that I got nice, oblong heads which were not attacked by the common cabbage worm which on other cabbages of our common kinds were very abundant. As the directions said to sow the seed late in July, I did this; but this second sowing, here in Connecticut, is too late for forming heads. I suppose when frost has affected it, the green leaves, which look nice, can be eaten as we do kale. I shall try to preserve them by protection in a sheltered place for the winter. None has gone to seed of the early sowing. In short, it is a desirable addition to our vegetables and I honestly recommend it for use in any home garden or market. I exhibited a large head at a meeting of our State Horticultural Society a week ago, and received the hearty thanks of the members and a certificate of merit."

Mr. Will B. Munson, of The Munson Nurseries, writes from Denison, Texas, Nov. 14, 1917, concerning various persimmons and jujubes which he has been testing:

"We find the Tamopan very hardy here and the tree very vigorous. The fruit is handsome, but it does not remain firm as long as the Japanese varieties; hence its keeping season is not so long. Its flavor is not so high in quality as most of the Japanese varieties. However, it is quite valuable on account of its hardiness, vigor, productiveness, and uniformly fairly large size.

"We have three varieties of the jujube, one of which is quite good. They bear very fully and every year, regardless of weather conditions. When their

uses are known it will become quite a fruit in this section of the country. We preserved some this season by boiling in sugar water. To prepare for preserving dry out and reboil, dry and reboil, and then dry. After drying, they were placed in a form and pressed into a package resembling dates. They are as good to eat as cured dates.

INVENTORY OF SEEDS AND PLANTS IMPORTED.

Owing to the war demands upon the government printing funds, it has been necessary to suspend temporarily the publication of the inventories of seeds and plants, which under normal conditions should appear every three months. There are now prepared several of these inventories which have been ready for the printer for many months.

While it is out of the question to publish these inventories in Plant Immigrants, it does seem advisable to reproduce here the brief Introductory Statements to these inventories which direct attention to the more important introductions. One of these statements will appear in each issue of Plant Immigrants.

Introductory Statement to Inventory No. 46, covering the period from January 1st to March 31st, 1915.

This Forty-sixth Inventory of Seeds and Plants shows the effects of the great war which has narrowed down the avenues of shipping and closed up countries from which many valuable plants were being secured through correspondence. It has delayed shipments to such an extent that it has not been practicable, in many instances, to arrange for the shipping from far interior points in India and China of anything more perishable than seeds. Furthermore, during the period covered by this inventory, no official agricultural explorer was in the field so that the descriptions are all of material sent in by correspondents or collaborators.

The most interesting of the introductions, judged before they are tested, appear to be the following;

Thirty-five selected varieties of wheat (Nos. 42102 to 42136), the result of much work of selection and acclimatization by the plant breeders of Victoria, some of them being of late foreign introduction into Australia while others are selections from types of old Australian wheats. These were supplied by Mr. A.

E. V. Richardson. Twenty-six varieties of wheat from the United Provinces of India (Nos. 41991 to 42016), representing some old Indian types, were presented by Mr. H. Martin Leake of Cawnpore. While these may none of them prove especially valuable it should be kept in mind that it was out of a cross between an Indian wheat, Ladoga, and the Red Fife that the famous Marquis wheat of Canada came.

The discovery of a nematode-resistant variety of hops, *Humulus lupulus* (No. 42024), by the plant breeders of the Southeastern Agricultural College of England should attract the attention of hop growers to the disease known as Nettle-head or Skinky, and the trial of this new variety may prove valuable in our hop fields.

Since Mr. C. V. Piper's preliminary study of the forage plants of India, during his trip there in 1911, he has continued to test many of the wild and cultivated grasses of that region, and Nos. 41885 to 41900, 41902 to 41907, 41910 to 41916, 41918 to 41921, represent a remarkable collection from Kirkee, India, presented by Mr. Wm. Burns, the Economic Botanist of the Station there, including *Andropogon annulatus* (No. 41885), a species well adapted to the Gulf States; *Cenchrus biflorus* (No. 41894), related to our sandbur but considered in Northern India as one of their most nutritious grasses; *Chloris paraguayensis* (Nos. 41759 and 41897), related to the Rhodes Grass, but native of Burma and Ceylon and considered a good fodder grass in Northern India, and in Australia one of the best grasses for pasturage and hay; *Chrysopogon montanus* (No. 41899), a handsome species, three to five feet tall, which already shows promise in Florida and Mississippi; *Iseilema wightii* (No. 41914), natural pasture grass of India; *Pennisetum ciliare* (No. 41915), a most valuable pasture and hay grass there; and *Thelepogon elegans* (No. 41918), which grows in the Indian rice fields, and can hardly be distinguished from rice until it flowers.

The breadnut tree of Yucatan, *Piratinera alicastrum* (No. 41880), the leaves of which are extensively used for forage purposes there, deserves trial in southern Florida, according to Dr. Lavedan who sends the seeds.

Through Mr. Roland McKee, who secured the Australian Exhibit of the Panama Pacific Exposition, a collection of Australian fodder grasses is now being tried (Nos. 41744 to 41762). It includes the extremely productive Kangaroo grass, the Cockatoo grass, the Rice grass, Sugar grass, three species of grasses

related to the Rhodes grass, and *Panicum distachyon* (No. 41746) which ranks as one of the best of the indigenous grasses of northern Australia.

The true tropical yams (*Dioscorea spp.*) have grown so well in Florida, and the quality of their tubers is so excellent that the introduction from Panama by Mr. O. W. Barrett of three selected strains (Nos. 42052 to 42054) is of special interest.

A palm, *Chamaedorea tepejilote* (No. 41705), the inflorescence of which forms a regular source of excellent food in the Vera Cruz province of Mexico, according to Dr. C. A. Purpus, and which will grow on sandy soil, might accommodate itself to conditions in Florida. And a tall-growing variety of the ordinary bean, the Tawana or Taguana (No. 42049), which climbs 15 to 20 meters into the tops of the high trees in Paraguay and which produces heavy crops of beans, will be interesting to bean growers even though it may not be a valuable acquisition.

The existence in Dominica of an indigenous walnut, *Juglans domingensis* (No. 41930), related to our black walnut, will interest those engaged in the hybridization of the species of *Juglans*; and the gathering together for propagation and distribution by Mr. C. A. Reed of the hardiest and best seedlings of the Persian or English walnut, *Juglans regia* (Nos. 42022 and 42023, and Nos. 42041 to 42044), from New York State and Canada, cannot fail to attract attention to the neglect which horticulturists of our Eastern States have shown to the possibilities of walnut culture on this side of the Rockies.

The Queensland nut, or *Macadamia* (No. 41808), has grown and fruited so well in California and Florida and its nuts are so delicious that it is a wonder more has not been done with it, - especially in Hawaii where trees were planted 30 years ago and where they have borne good crops, according to Mr. C. S. Judd of the Board of Commissioners of Agriculture, who sends in a quantity of seeds.

Although it is extremely doubtful if the Tanguatian almond, *Amygdalus tangutica* (Nos. 41708 and 41709), can be used as a stock for the almonds, it should certainly be hybridized with the ordinary almond, if possible, and the production of a bush almond at least attempted. The large amount of seeds sent in by Rev. C. F. Snyder from Kansu may bring this hybrid about.

Although in quality American varieties of the peach lead the world, there are yet possibly to be

found varieties less susceptible to the many peach diseases than are those we have; and the collection from Saharanpur, British India, (Nos. 41731 to 41743) may contain such varieties.

The search for grapes suited to the conditions of the Southern States and possibly capable of hybridizing with the Muscadine has brought in *Vitis tiliifolia* (No. 41707) from Vera Cruz, Mexico, and *Vitis davidii* (No. 41877) from Central China.

The subtropical and East Indian plum, *Prunus bokhariensis* (No. 42057), from Simla which resembles *Prunus salicina*, may play a role in the production of a plum for our Southern States. The Service Tree of southern Europe, *Sorbus domestica* (No. 41703), which grows into such a stately beautiful tree and bears palatable fruits, appears to have been strangely neglected by horticulturists. Although already very many varieties of Japanese persimmon have been introduced, the extensive collections from Okitsu (Nos. 41691 to 41702, Nos. 41779 to 41793, and Nos. 42138 to 42165) may contain some better suited to our conditions or less astringent than those we are testing.

The Brazilian Expedition, sent out by this office in 1913, discovered in the campo near Lavras a strange and quite remarkable fruit (*Eugenia klotzschiana*), characterized by a remarkable fragrance. Through the kindness of Mr. Hunnicut a quantity of seeds has been secured (No. 42030) and the species will be given a thorough trial.

Solanum quitoense (No. 42034), the Naranjilla of Quito, with fruits the size of small oranges, which form the principal article of food of the settlers during certain seasons, should certainly be given a trial in this country.

So much and such genuine interest has been aroused in the Japanese flowering cherry trees, through the gift to the City of Washington by the Mayor of Tokyo of a collection of them, and through the satisfactory growth which specimen trees have made in Maryland, Massachusetts, and California, that a demand for them has grown up which nurserymen find it difficult to meet. It is of interest, therefore, to point out that 54 varieties from the municipal collection of Tokyo near Arakawa, which represent the loveliest of the hundreds of varieties known to the Japanese, have been secured through the Mayor's courtesy, and these will be propagated and distributed under the same varietal names as they bear in the Arakawan collection (Nos. 41817 to 41870).

The *Paulownia tomentosa* has become such a feature tree in our parks that a new species with larger flowers, from Formosa, *P. fortunei* (No. 42036), will be watched with interest. Benthams's Cornel from Nepal, *Cornus capitata* (No. 42287), with heads of yellowish flowers and deep orange fruits, the size of nectarines, will interest those with whom the American dogwood is a favorite.

The Oriental bamboos are not the only species of value for timber, and those living in the tropics will want to test the Takuara of Paraguay, *Bambos guadua* (No. 42066), a species evidently too tender for Florida.

Those interested in tropical timber trees will find some remarkable ones in the collections introduced from Madagascar (Nos. 42355 to 42376), Argentina (Nos. 42321 to 42332), or in the famous Jequitiba of Brazil, one of the largest and most beautiful of all tropical forest trees introduced for the first time by the Forest Expert, Mr. H. M. Curran, from Bahia (No. 41933).

David Fairchild.
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